



Finanziato
dall'Unione europea
NextGenerationEU



Ministero
dell'Università
e della Ricerca



Italiadomani
PIANO NAZIONALE
DI RIPRESA E RESILIENZA



GW170817: A VO interoperability

The collage consists of four panels:

- ESO + LIGO/Virgo:** A screenshot showing a star map with a purple elliptical region indicating the search area for the gravitational wave event GW170817.
- ESO + HST (ESASky):** A screenshot showing a star map with several overlapping rectangular regions of interest, likely from ESO's Very Large Telescope and Hubble Space Telescope.
- ESO La Silla Paranal + ALMA:** A screenshot showing a star map with a large circular region of interest centered on the event, with the text "ESO La Silla Paranal + ALMA" below it.
- GLADEnet:** A screenshot of a web-based application interface titled "GLADEnet: Empowering Galaxy Catalogs for Multimessenger Applications". It includes sections for "Event Selection", "Completeness", "Completeness Plot", "Applications", and "Libraries".

A blue arrow points from the left side of the collage towards the GLADEnet screenshot.

From ESCAPE Virtual Observatory Connecting ESFRI data to the EOSC using the VO =

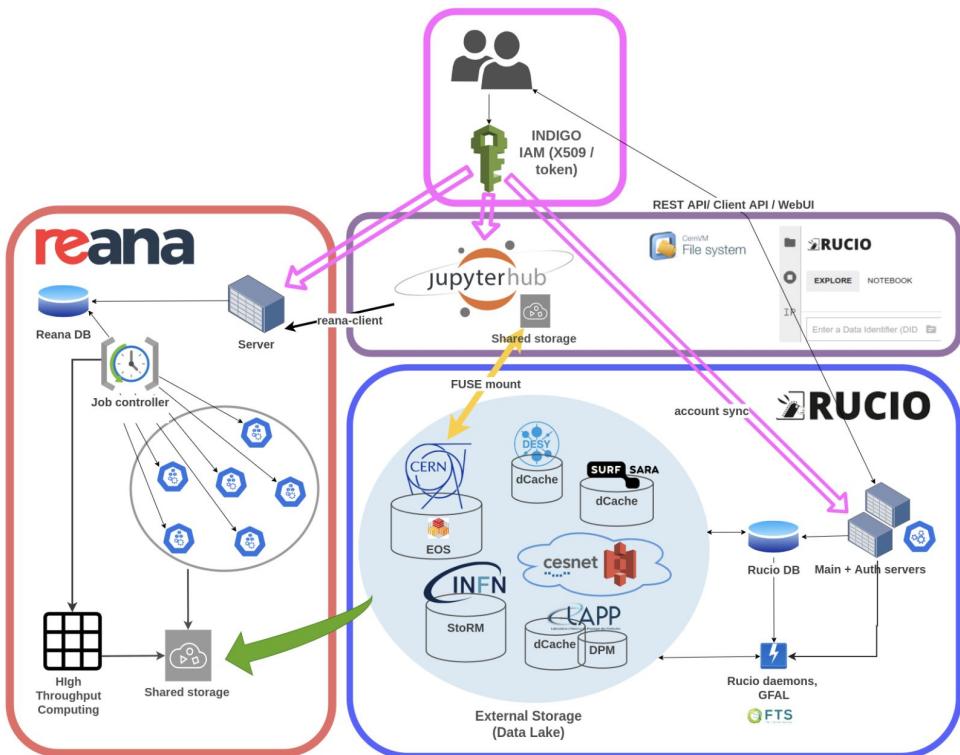
https://www.youtube.com/watch?v=_MQVCT1WMg4

3D Glade Galaxies (INFN)
Providing new interop.

[\[Link to demo\]](#)

The CERN-VRE (Virtual Research Environment)

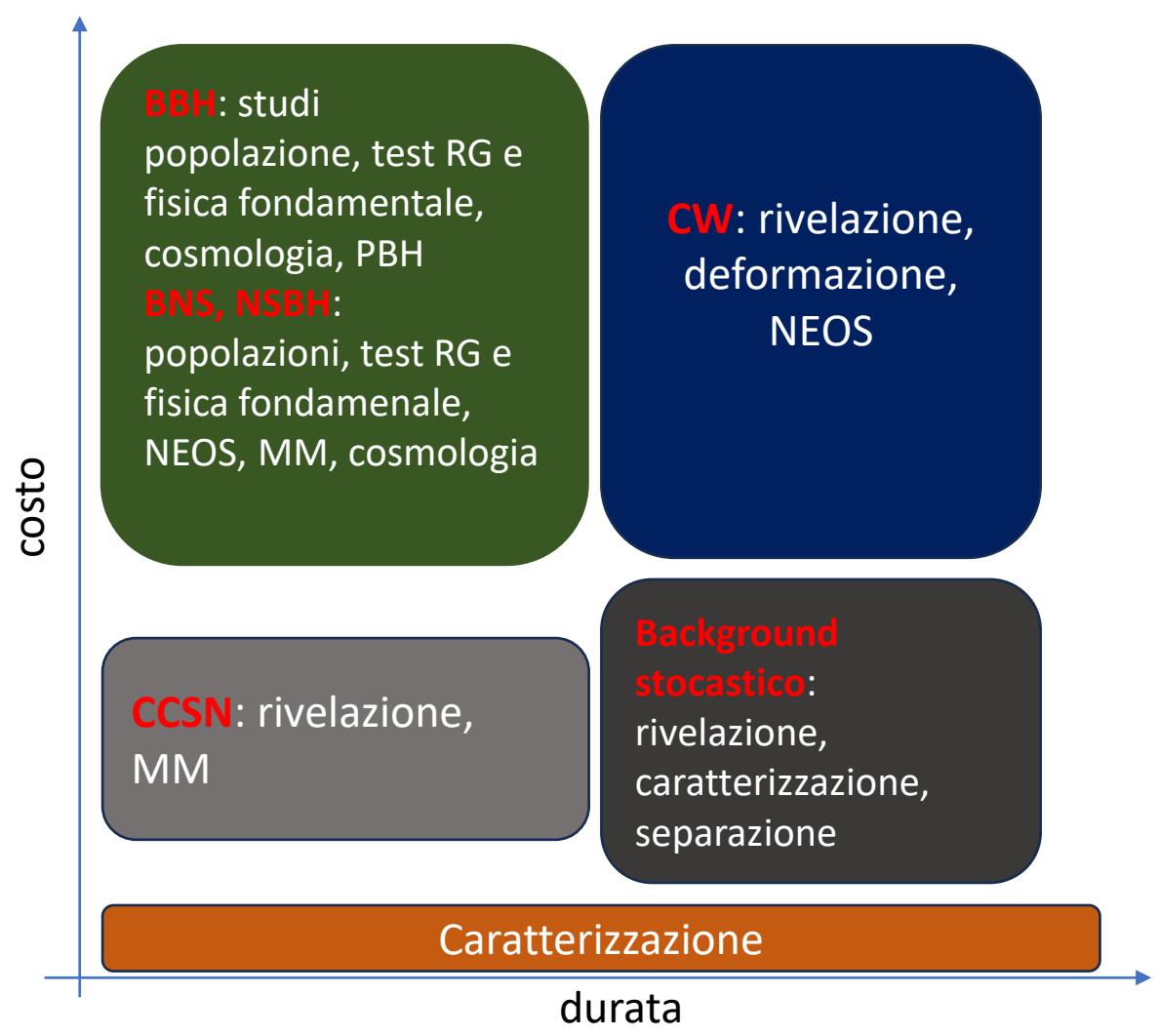
<https://vre-hub.github.io/>



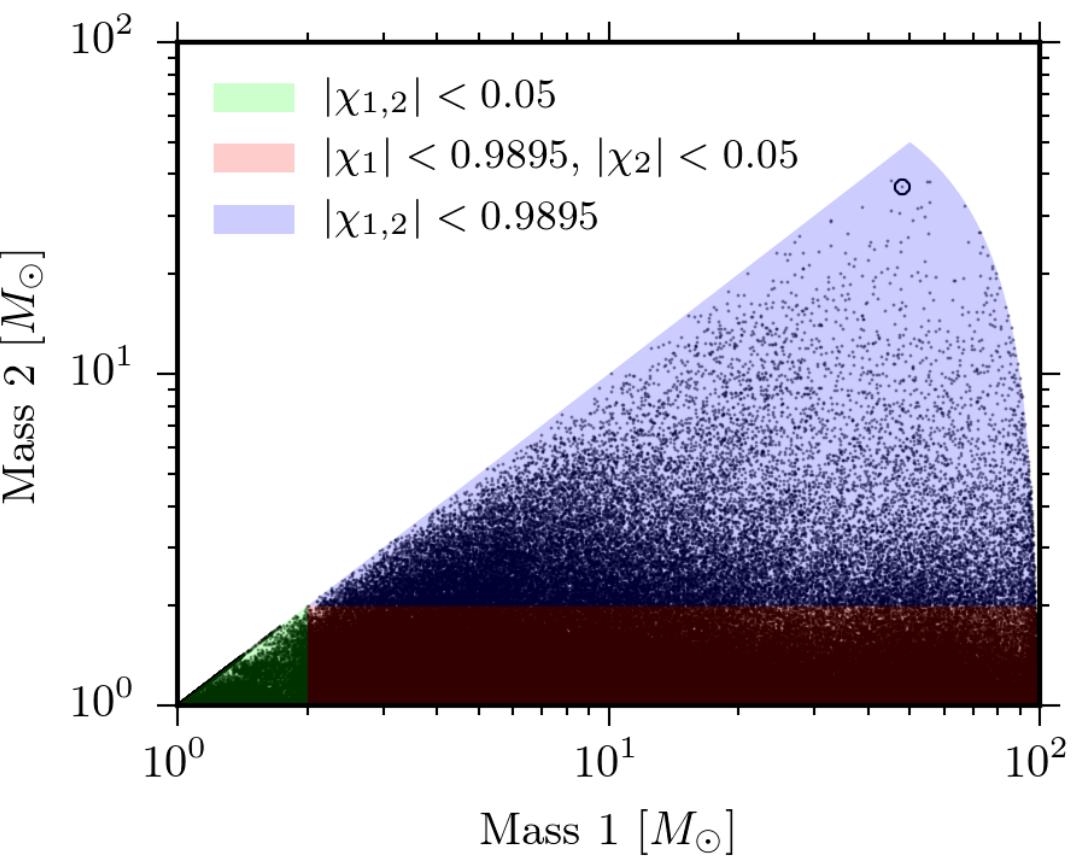
An **analysis facility**, which allows the following services to be connected:

- ESCAPE **Data Lake infrastructure** - A federated distributed storage solution (based on **RUCIO**).
- Computing cluster powered by **REANA** (analysis platform with special focus on reanalysis).
- Accessible via a **Jupyter** frontend that can
 - load user **software environments**,
 - use a **Notebook** service
 - access to **CVMFS** repositories.
- By a single login to a federated AAI - **ESCAPE INDIGO IAM**.

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	LVK	ET
Rate eventi	$10^2 \text{ } y^{-1}$	$10^5 \text{ } y^{-1}$
Massa	$1M_\odot < M < 10^2 M_\odot$	$10^{-1}M_\odot < M < 10^3 M_\odot$
Durata	$1s < T < 10^2 s$	$1s < T < 10^5 s$



$$\tau \simeq 2.18s \left(\frac{1.21M_\odot}{\mathcal{M}} \right)^{5/3} \left(\frac{100\text{Hz}}{f} \right)^{8/3}$$

- Effetto combinato dell'aumento della banda: densità e lunghezza
- Precisione PE? Bias?
- Sovrapposizione eventi
- Parallelismo
- Dipendenza dal segnale

High-level architecture

